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10/748,699	12/29/2003	Yeong Soo Nam	10125/4129	2139

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EXAMINER

SCHECHTER, ANDREW M

ART UNIT	PAPER NUMBER
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2871

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)
	10/748,699	NAM ET AL.
	Examiner Andrew Schechter	Art Unit 2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 19 January 2007.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-18,20-27 and 29-36 is/are pending in the application.

4a) Of the above claim(s) 11-16 is/are withdrawn from consideration.

5) Claim(s) 8-10,17,18,20-27 and 29-36 is/are allowed..

6) Claim(s) 1-7 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 29 December 2003 is/are: a) accepted or b) objected to by the Examiner.

 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

- Certified copies of the priority documents have been received.
- Certified copies of the priority documents have been received in Application No. _____.
- Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) Notice of Informal Patent Application

6) Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 19 January 2007 have been fully considered but they are not fully persuasive.

The applicant argues [p. 8] that the conflict between claims 1 and 2 which resulted in a rejection of claim 2 under 35 USC 112, first paragraph, has been obviated by the amendment to claim 1. This is correct. Unfortunately, this was done by deleting the conflicting limitation that "the predetermined bent portion has substantially straight segments", which was previously added in order to distinguish from the *Kim-Dohjo* combination applied in the office action of 8 March 2006. That rejection therefore applies to the present claims.

The applicant argues [pp. 9-10] that the two lines in *Lee*'s Fig. 3 are bent outwardly rather than inwardly, so the gate line does not have "an edge portion bent angularly and inwardly" as recited. This is not persuasive. Both the examiner and the applicant can agree that the gate line/gate electrode wiring in *Lee*'s Fig. 3 has a edge portion bent angularly on its lower edge; and that the lower edge is higher near the data line crossing than it is near the storage capacitor, away from the data line crossing. The same could be said of the applicant's Fig. 2a, which also shows a storage capacitor. Nothing in the claim language "bent ... inwardly" distinguishes the two structures from each other. Both could be described as being bent outwardly or bent inwardly, depending on one's perspective, noting especially that the storage capacitor covers a

large fraction of the pixel width. In contrast, the examiner would hold that the top edge of the gate line does bend angularly and outwardly from the gate line at the gate electrode, given that it covers only a small fraction of the pixel width.

The applicant argues [p. 10] that the data line intersects the lower edge of the gate line at right angles, so it does not overlap “some of the bent edge portion of the gate line” as amended. The examiner interprets the phrase “bent edge portion” to mean the part of the edge of the gate line which is not horizontal; that is, the limitation means that the data line overlaps some of the non-horizontal edge of the gate line (this assumes that the gate line is horizontal, which is normally the case; were it not horizontal the interpretation would be analogous). The examiner agrees that this distinguishes claims 1 and 8 from the *Lee* reference, so the previous rejections in view of *Lee* are withdrawn.

Claim Objections

2. Claim 8 is objected to because of the following informalities: “portion bent angularly and inwardly” in line 6 should be “edge portion bent angularly and inwardly”. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Kim et al.*, Korean Patent Document No. P1999-0074559 (made of record by the applicant), in view of *Dohjo et al.*, U.S. Patent No. 6,078,366.

Kim discloses [see Figs. 2 and 3] an LCD comprising a substrate [1], gate line [2] having an edge portion bent angularly (at the edge where the sine-wave part meets the straight part) and inwardly (the parts of the sine-wave region adjacent the straight part, for instance), gate electrode [21] projecting from the gate line, gate insulating layer [3], data line [6] overlapping some of the bent edge portion of the gate line, source electrode [61] and drain electrode [62], and pixel electrode [8].

Kim does not explicitly disclose an active layer below the data line, source electrode, and drain electrode [4 is only below the source and drain electrodes]. *Dohjo* discloses [see title, Figs. 2 and 17, for instance] an active layer which is below the data line as well as the source and drain electrodes. It would have been obvious to one of ordinary skill in the art at the time of the invention to have such an active layer in the device of *Kim*, motivated by *Dohjo*'s teaching that this provides higher production yield due to suppressing capacitance fluctuations and shorting, and reduces the number of masking steps needed [col. 18, lines 42ff., for instance]. Claim 1 is therefore unpatentable.

At least a section of the bent edge portion is curved, so claim 2 is also unpatentable. The active layer overlaps the upper side of the gate electrode and

portions of the source and drain electrodes, so claim 3 is also unpatentable. There is a passivation layer [7] with a contact hole, so claim 6 is also unpatentable.

5. Claims 4, 5, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Kim et al.*, Korean Patent Document No. P1999-0074559 (made of record by the applicant), in view of *Dohjo et al.*, U.S. Patent No. 6,078,366 as applied above, and further in view of *Lee*, US 2002/0163602.

Kim does not appear to explicitly disclose that the data line comprises one of the metals recited in claim 4. *Lee* discloses an analogous LCD in which the data line is made of Cr or Mo [paragraph 0081]. *Kim* does not appear to explicitly disclose that the pixel electrode comprises one of the materials recited in claim 5. *Lee* discloses an analogous LCD in which the pixel electrode is made of ITO. *Kim* does not appear to explicitly disclose the passivation layer being an inorganic or organic insulating material as recited in claim 7. *Lee* discloses an analogous passivation layer [48] which is an organic or inorganic material [paragraph 0085]. In each case, the use of such materials would have been obvious to one of ordinary skill in the art at the time of the invention, motivated by these being the conventional materials used for such elements in LCDs, which brings advantages of availability, obviating the need for experimentation and development, ability to use pre-existing manufacturing equipment and supplies, etc. Claims 4, 5, and 7 are therefore unpatentable.

Allowable Subject Matter

6. Claims 8-10, 17, 18, 20-27 and 29-36 are allowed.

7. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not disclose the device of claim 8, in particular the limitations that the gate line has an edge portion bent angularly and inwardly, with the data line overlapped with some of the bent edge portion of the gate line, and that the gate electrode projecting from the gate line has an edge portion bent angularly and inwardly, with the drain electrode overlapped with the bent edge portion of the gate electrode.

Claim 8 is therefore allowed, as are its dependent claims 9 and 10. [Note, however, the typographical objection to claim 8 above.]

The prior art does not disclose the device of claim 17, in particular the limitation that there is a notch formed in a boundary of a second side of the gate line, disposed between an edge of the gate electrode and an edge of the date line, such that the length of the boundary where a portion of the notch overlaps the data line is greater than a width of the data line, wherein the data line is adjacent to the gate electrode.

Claim 17 is therefore allowed, as are its dependent claims 18 and 20-26.

The prior art does not disclose the device of claim 27, in particular the additional limitation (amended from the previous claim 28) that a boundary of the gate electrode that overlaps the drain electrode is greater than a width of the drain electrode. Claim 27 is therefore allowed, as are its dependent claims 29-36.

Election/Restrictions

8. Claims 11-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (571) 272-2302. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Andrew Schechter
Primary Examiner
Technology Center 2800
2 April 2007